Response of Texas Beekeepers Association
to the April 2020 Environmental Assessment on the Proposed Release of Bikasha collaris and Gadirtha fusca for Classical Biological Control of the Chinese Tallow Tree
February 17, 2021
(TexasBeekeepers.org)

The Chinese Tallow tree has been a part of the southeastern US landscape for several hundred years as stated in the April 2020 Environmental Assessment (EA) currently published for comment. However, the EA does not mention that it was the United States Department of Agriculture that promoted the planting of tallow trees along the Gulf Coast in the early 1900s in an attempt to establish a soap making industry.[1] The good folks at the USDA no doubt considered the matter and thought it was a good idea at the time. Today Chinese Tallow is classified as a prohibited noxious weed in several southern states and the USDA is looking for a way to deal with the spread of Chinese Tallow after having been one of the contributors to the current problem. The USDA has not always been correct in its assessments.

The Texas Beekeepers Association (TBA) opposes the issuance of permits for the field release of both Bikasha collaris and Gadirtha fusca (collectively "the biological control agents"), permits that "would contain no special provisions or requirements concerning release procedures or mitigating measures." After carefully reviewing the EA, TBA does not agree with the preliminary determination that the release of these biological control agents will not have a significant impact on the quality of the human environment. TBA believes the EA is lacking in substantive and critical areas, and that further understanding of the potential significant effects on the quality of the human environment associated with the release of the biological control agents needs to be explored before proceeding with the permits.

We believe there are numerous critical areas that are not sufficiently addressed in the EA, including but not limited to:

I. The significant impact on the environment, ecology, agriculture, beekeeping industry, beekeepers, honey production, honey bees, and pollinators in Texas and other Tallow prevalent states.
II. The lack of consultation with state agencies in states that would be directly and significantly impacted by the release of the biological control agents.
III. The risks to the ecosystem that could result from release of the biological control agents.
IV. The lack of consideration of mitigation strategies related to the loss of Chinese Tallow.

These areas necessarily overlap one another, but for purposes of our response we will address our concerns under these respective headings.

I. The significant impact on the environment, ecology, agriculture, beekeeping industry, beekeepers, honey production, honey bees, and pollinators in Texas and other Tallow prevalent states.

Upon review, it is evident that the EA does not demonstrate a clear understanding of the critical importance of Chinese Tallow to the beekeeping industry in the Tallow prevalent southern states. Further, the EA gives only cursory review of the impact of the loss of Chinese Tallow, not only to the beekeeping industry in general, but to agriculture and food production in the U.S.

A. Understanding Honey Production in Tallow Prevalent States

In Section IV. A. g., (Page 17), the EA devotes one sentence to the honey crop produced by Chinese Tallow and that reference is specific to Florida. The significance of Chinese Tallow to the honey crop in Texas and other southern states where Tallow is prevalent is a critical factor that should be sufficiently examined and considered in order to properly evaluate the impact of the release of the biological control agents.

One of the commenters during this comment period, Mr. Jerry Stroope of Pearland, Texas, ID: APHIS-2020-0035-0400, a 72 year old third-generation Texas beekeeper, gives an excellent history of his first-hand knowledge of the importance of Chinese Tallow to honey production in Texas. We incorporate his comments herein by reference.

Texas was sixth in the nation for honey production in 2019, producing 7.4 million pounds[2], with a wholesale economic value of $15,000,000. It is estimated that between 75% - 90% of the honey produced in Texas is from the nectar produced by Chinese Tallow and that 15% of the total U.S. honey crop is attributable to Chinese Tallow.

In an issue of the American Bee Journal in 1979, well-respected beekeeping expert Jerry Hayes said of the Chinese Tallow tree that it "…has become the most successful tree nectar source ever introduced into the United States." He added that "[c]ertainly few trees combine the qualities of the Tallow tree for the beekeeper."[3] The experience of the owner of Lemoine's Honey Farm in Deville, Louisiana, APHIS-2020-0035-0068, is typical of beekeepers in Tallow prevalent states when he says "…I average 20# of honey per colony in my bee yards with 0 tallow trees but the yards I have tallow trees in I average 100# a hive…" That is how significant Tallow nectar is to honey production.

The demand for locally produced honey is at an all-time high in Texas. Tallow honey has become a sought-after local varietal by consumers who seek honey produced in their local area as stated in comments by Eric Wenger, Barkman Honey, Hillsboro, KS, APHIS-2020-0035-0427, which we incorporate herein by reference. In fact, TBA received a USDA grant through the Texas Department of Agriculture in 2016, and spent two years working in collaboration with Dr. Juliana Rangel, Ph.D., AgriLife Research honey bee scientist in the Department of Entomology, Texas A&M University, Bryan-College Station, Texas to study, test and promote Texas produced honey as a specialty crop. This research aided in the successful efforts of Real Texas Honey, a Texas non-profit corporation established by TBA in 2017, to work with Texas honey producers to promote their Texas produced honey.

You have received hundreds of comments during this comment period from large and small honey producers in Texas and other Tallow prevalent states who are understandably concerned about the impact the biological control agents will have on honey production and how it will impact them financially. (The financial impacts are not just limited to honey producers as Blake Shook of Desert Creek Honey in Blue Ridge, TX, APHIS-2020-0035-0108, and Melissa Shipley of A.H. Meyer & Sons, Inc., Winfred, SD, APHIS-2020-0035-0391, point out in their comments, which we incorporate herein by reference.) These concerns are a legitimate potential impact that should be given more consideration in the EA than the statement in Section IV.B.9 (Page 32) and C.9 (Page 47), that the biological control agents "…would reduce (but not eliminate) the presence of tallow as a nectar source for honey bees…" How much of a reduction in Tallow nectar would it take to have a significant impact on the Tallow honey crop? Where is this addressed in the EA?

Beekeepers understand the consequences of a reduction in Tallow. Less honey production would lead to fewer beekeepers. Fewer beekeepers would lead to fewer honey bees. Fewer honey bees in an environment where honey bees are struggling to surview could lead to serious consequences for agriculture and the nation's food production. (See comments of Wendy Reed, Montgomery, Texas APHIS-2020-0035-0085, incorporated herein by reference.) Not considering these potential impacts is a serious deficiency in the EA.

B. Understanding the Impact of the Loss of Clean Bee Forage

Section IV. A. g., (Page 17) of the EA states that "Commercial beekeepers from other states move colonies each year to Mississippi, Louisiana, and Texas to take advantage of tallow. This movement of commercial hives is often aimed specifically at servicing the migratory pollination process, with tallow providing key nourishment for the bees to pollinate crops and produce honey (Brown and Payne, 2018)." It becomes apparent in later sections of the EA that the significance of this statement is not fully comprehended.

A decrease in Chinese Tallow from the introduction of the biological control agents would greatly damage the commercial beekeeping industry in Texas and nationally. Honey bees are an essential part of agriculture, pollinating one-third of the food Americans eat. Commercial beekeepers from all over the U.S. move tens of thousands of colonies to south Texas each winter for the purpose of capitalizing on the state's climate and abundant forage, with Tallow providing the key nourishment.[4] These beekeepers then take their colonies all over the U.S. to pollinate various crops. Blake Shook (referenced earlier) pointed out in his comments, "Tallow provides healthy forage for up to 1 million (almost half) beehives in the USA." With not enough bees to pollinate crops already a concern, any loss of a forage source as critical as Chinese Tallow to that many honey bee colonies could pose a risk to the U.S. food supply. The EA does not seem to make this connection.

In IV.B.9 (Page 32) and C.9 (Page 48) the EA states "Tallow would not be eliminated as a nectar/pollen source for beekeepers, even in the long term because biological control agents have never completely eliminated their target. [The biological control agents are] expected to impact seedlings only, not established plants. Any reductions in tallow populations would occur gradually, over five or more years. The gradual reduction would allow time for alternative,

native nectar sources to recover or be planted by beekeepers, land managers, environmental groups, etc. This would be beneficial to nonmigratory honey bees and native pollinators because of the reduction in native nectar plants caused by tallow." Where is the documentation to support that the gradual decrease of tallow populations would occur over five for more years? It is asserted in these two sections, with no reference. Where is the evidence that the "gradual reduction" would allow alternative native sources to recover to the extent that the loss of Tallow would not be detrimental to a critical source of clean bee forage, as is implied? Where is the evidence that native sources could even provide sufficient replacement for Tallow, in the same locations and conditions where Tallow has flourished? What would be the cost to "beekeepers, land managers, environment groups," states, and the federal government of "replacing the clean forage source that Chinese Tallow provides? These assertions may be what the authors of the EA "hope" will happen, but the impact is too critical to rely on that. Where are the studies to back this up and where is the economic analysis?

Beekeepers know and appreciate the benefits of a diverse ecosystem and native plants and pollinators. Native pollinators are vital to our ecosystems, but native pollinators are not able to provide the pollination needs of the U.S., even under ideal conditions. The Western honey bee (Apis mellifera) is not native to the U.S., but where would we be without it? One of the major factors in declining honey bee populations is loss of clean bee forage. Pollinator forage is desperately needed for honey bees as well as native pollinators, whether it comes from native or non-native plants.[5] Tallow has provided a stable, clean pollinator forage source for many years in the southern states. The impact of reducing this source is an important assessment that needs to be made before approving release of the biological control agents.

C. Competing Economic Interests

Cost estimates for controlling Chinese Tallow in the forestlands of Texas, Louisiana and Mississippi are referenced in the EA (Section I, Page 2) and are one of the factors cited as a **reason** "…the applicant has a need to release B. collaris and G. fusca…", while admitting that current control methods will still need to continue. There are often competing economic interests that must be considered in matters such as this. The beekeeping industry is small compared to the managed forest industry and is therefore at somewhat of a disadvantage in this issue. However, the beekeeping industry is not insignificant given that honey bees are critical to U.S. food production. If there were no options for control of Chinese Tallow in southern forests, or if the risk of Tallow was an imminent threat to the forest industry, then the rush to find a solution might be warranted. That is not where we are. We are not unsympathetic to the increasing costs of controlling Tallow to the forest industry. But the potential of significant damage to the beekeeping industry is not the only alternative. There are other options that should be considered and sufficiently explored before permitting release of the biological control agents.

II. The lack of consultation with state agencies in states that would be directly and significantly impacted by the release of the biological control agents.

With such a potentially significant impact to Texas and other southern states as discussed in I. above, we were surprised to see that no state agencies in Texas or the other states in which Chinese Tallow is prevalent were listed in Section VI of the EA among the agencies consulted.

(The only state agriculture departments listed are those of California and New Mexico, neither of which stands to be significantly impacted by the release since Tallow is not an issue in New Mexico and is primarily an ornamental tree in California.) The Texas Department of Agriculture (TDA) would have an inherent interest in any efforts that would result in loss of Chinese Tallow in Texas due to the significant adverse effects it would have on agricultural interests in the state, i.e., beekeepers, pollination services, honey production, pollinator health.

We believe it is critical to this EA to have input from TDA on how the loss of Chinese tallow would impact Texas honey production, agriculture and the agricultural economy. It would also be critical to get input from TDA on plans for and the cost of possible mitigation strategies, if any, that might be able to offset the loss of Chinese Tallow.

In Texas there are several agencies focused on pollinator health, including Texas Parks and Wildlife, Comptroller of Public Accounts, Department of Transportation, and the Texas Apiary Inspection Service. These agencies testified in public hearings on pollinator health convened by two legislative committees in the summer of 2018. Following these hearings, an interim study was released in November 2018. The study did not mention Chinese Tallow as having a significant negative impact on native pollinators. The study did discuss the need for plentiful and sustainable forage sources. As previously discussed, Chinese tallow is a major forage source for honey bees in Texas. A reduction in tallow could significantly impact pollinator health in Texas and lead to further declines in pollinator populations. Consultation with state agencies focused on pollinator health could provide valuable insight.

We do not see how permitting for the release of the biological control agents can take place without consulting state agencies in the Tallow prevalent states.

III. The Risks to the ecosystem that could result from release of the biological control agents.

One of the overriding concerns expressed in comments during this open comment period is the potential for unintended consequences to the ecosystem from introduction of the biological control agents. We share that concern.

The most fundamental question in considering deliberate introductions of exotic species against invasive species is whether the outcomes can be predicted precisely enough *a priori* to know with some certainty that the benefits will outweigh the environmental costs.[6] The EA does not offer much in the way of certainty.

A. The EA states that the biological control agents are considered monophagous in their native China, restricted only to Tallow. (Section IV. B.1.b., Page 19 and Section IV. C.1.b. Page 34) The assumption is made that the biological control agents will also be monophagous in the U.S. environment. However, no one can be assured that will be the case ***until*** the biological control agents are released in the U.S., even with the experimental tests performed by the USDA/Agricultural Research Service (ARS)/Invasive Plant Research. The EA discusses these "Uncertainties" in Section IV.B.3, Page 31 and IV.C.3., Page 46. According to the EA, the risk of the biological control agents moving to unrelated plants is “slight” and “rare.” Are “slight” and “rare” acceptable risks? Predicting the outcome is more complex than implied in the EA.

B. Host specificity testing for the biological control agents was done and is described in the EA. (Section IV.B.1.b., Page 20 and Section IV.C.1.b., Page 34) Re Bikasha collaris, “no-choice adult tests in China indicated that survival only occurred on a few test plant species.” How many is a “few.” Evaluation procedures in biological control, which rely heavily on host-specificity tests, are not designed to quantitatively predict population impacts on either targeted or nontargeted species.[7] If there are a “few,” what is the possibility that the “few” will not be expanded in the wild, whether in China or here in the U.S.?

C. Many specific examples are cited by those posting comments during this open comment period of non-natives introduced into the U.S. that have gone beyond their projected hosts or intended purpose, and, in some cases, becoming out of control. eg. Kudzu, KR Bluestem, Grass Carp, Bermuda Grass, Zebra Mussel, Africanized Bees, and many more.[8] Some were accidental releases, but many were released by the USDA and other federal agencies, for use as a biological control of a plant, erosion control, or for livestock forage improvement. Use of “specialist insects” reduces the chance of direct nontarget use, but it is never foolproof.[9]

D. Test Plant List. Re Bikasha collaris (EA Section IV.B.1.b.(2), Page 20)
“It is generally assumed that plant species more closely related to the target weed species are at greater risk of attack than more distantly related species.” (EA Section IV.B.1.b(2) Page 20) “Generally assumed” is far from “proof.”

Category 1: Genetic types of the target weed species
“Testing reported in this document was conducted on plants from the North Florida area which represents the primary invasive genotype that occurs throughout the southeastern United States (Dewalt et al., 2011)” The examiners are applying the test genotype to cover all genotypes across the entire southeast when by their own admission in the EA, there are several genotypes. These “assumptions” may very well be invalid and potentially dangerous.

“…insects released for biological control in North American may have greater fitness and impact against tallow because…” (Page 21) It is also possible that that the insect released in North America may in fact have a “greater fitness and impact” on unknown or untested non-target species. Examples of this are plentiful.[10]

Category 3: Species in other genera in the same family as the target weed, divided by subfamily and tribes, including environmentally and economically important species (Page 21) (referencing the lists on pages 21 – 26. Note “including environmentally and economically import species”. Even though these species are Category 3 plants and “not likely” to ever be fed upon, when and if they do, they are still considered environmentally and economically important species. There are 14 state or federally listed native threatened or endangered plant species including 2 from Texas. These are plant species that “could” be fed on in the event of an escape of *Bikasha collaris*.

(3) Discussion of Host Specificity Testing (Page 28)

This is annotated in the tests on page 29. "These naïve adults fed these non-targets lived only 9 days compared with more than 60 days longevity for tallow-fed adults (appendix 2, figure 2-3)". It is a poor assumption that when released adults that feed on tallow and then run out of their target specie will die prior to migrating over to non-target species. Life tends to find a way to continue, to survive, to migrate to non-target species.

D. Uncertainties Regarding the Environmental Release of *Bikasha collaris* (EA IV.B.3, Page 31)

"…, there is a slight possibility that it could move from the target plant (tallow) to attack nontarget plants." How much of a "possibility" are we to consider safe? Is a "slight possibility" too much? "…, the resulting effects could be environmental impacts that may not be easily reversed." In unscientific terms, it's like toothpaste - after it's out of the tube it can't be put back in.

"However, significant not-target impacts on plant populations from previous releases of weed biological control agents are unusual (Suckling and Sforza, 2014)." "Unusual." There is some chance, but it is not much of a chance, that *Bikasha collaris* will get away and cause untold millions in damage that cannot be stopped. Is it worth the risk?

The USDA considered it worth the risk to introduce KR Bluestem grass from the Old World. They said it will control erosion. It is in every county in Texas and New Mexico. It has not controlled erosion. Cattle will not even eat it unless they are starving. Can it be stopped on a large scale? No. How about on a small scale? Yes, if you can afford it and have the time and patience. (Dennis Herbert, Wildlife Biologist, Texas)

E. Appendix 2. U.S. host-specificity testing methods and results for *Bikasha collaris* (Wheeler et al., 2016). Page 65.

Numbers of replicates - "… insufficient replication was achieved in a few cases due to difficulty with plant acquisition and production.". Ten replicates of the non-target species were planned and was part of the test design, but they were not able to achieve their design parameters. The test failed and should be done again as designed. We are expected to accept their results of a failed design. Also, they stated that *Bikasha collaris* did jump to an unrelated plant (*Ricinus communis*), the Castor Bean, which is in the Spurge family. If the insect jumped to this unrelated specie why should we believe that it would not jump to other plant species. On top of this, they stated they could not replicate the test because they could not find other *Ricinus* plants to confirm the tests. Poor test design… Poor conclusions?

Stage and age of individuals – Young adults were used for the adult no-choice tests instead of healthy adults, implying "conservative" results. There will be healthy adults in the wild and feeding on tallow and in fact more likely to later spillover causing damage to neighboring species, as is stated in the EA. Acceptable conclusions?

Details of experimental design – "The number of test plants included in an experiment varied due to availability of plants and personnel work load." How well was the test designed since they could not find the correct plants for the test or there were not enough personnel to handle the work load? The test failed according to the plan. Can we rely on the conclusions? Additionally, we incorporate the comments of Aaron Kieler APHIS-2020-0035-0045, herein by reference.

Summary. Biological control is an option for management of Chinese Tallow. The question is, will it be both effective and environmentally safe. Can we, with any certainty given the observations above, conclude that it will? The success rate of biological control of invasive species is very low in general (some represent that it is less than 10-20% overall). [11]

As discussed earlier, mechanical and localized chemical control methods exist for controlling the spread of Chinese Tallow. Although they take time and resources, we believe they represent less harmful containment strategies in the long run, than introducing self-replicating, self-dispersing, irretrievable biological "natural enemies" with unexpected ecological side effects.[12] We do not believe the current situation warrants the risk.

IV. Lack of consideration of mitigation strategies related to the loss of Chinese Tallow.

"The gradual reduction would allow time for alternative, native nectar sources to recover or be planted by beekeepers, land managers, environmental groups, etc." (EA Section IV, B.9, Page 32 and Section IV,C.9, Page 48) This is the extent of the restoration plan offered in the EA. We agree with the comments of Ellie Rosser of Inman, SC (APHIS-2020-0035-0224), which we incorporate herein by reference, when she says "It is not clear how native species will reintroduce themselves in anything like a timely manner…There is no mention made anywhere in the report about the risk that tallow will simply be replaced by other rapidly growing invasive species able to take more timely and effective advantage of the niche made available to them than less prolific native species will if left to themselves."

The gradual reduction might allow "time," but where will the financial and manpower resources and the "alternative, native nectar sources" come from? Beekeepers in Texas are very conscience of the landscape and the need for sustainable pollinator forage. One of the priorities of TBA is working with government agencies in Texas to increase healthy, sustainable forage for pollinators. While Texas is aware of this need, we are already behind the curve in implementing successful strategies. Adding the potential loss of Tallow, a plentiful, clean forage source, further exacerbates the efforts.

Request for Extension of Comment Period

TBA opposes the release of the biological control agents since the release of the biological control agents will have significant impact to the environment, ecology, agriculture, beekeeping industry, beekeepers, honey production, honey bees, and pollinators in Texas and other Tallow prevalent states, that has not been fully taken into account. We do not believe the risks involved warrant the release of the biological control agents at this time.

We join with the American Farm Bureau Federation in asking that APHIS extend the comment period for an additional 30-days to allow additional time to confer with key stakeholders. We then ask that APHIS review the EA in light of the comments received and give serious consideration to proceeding with the issuance of permits for the release of the biological control agents.

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[1] Southeast Exotic Pest Plant Council. https://www.se-eppc.org/manual/SASE.html

[2] AgriLife Today, October 20, 2020. https://agrilifetoday.tamu.edu/2020/10/20/texas-honey-production-tops-7-4-millionpounds/#:~:text=Texas%20remained%20sixth%20in%20the,A%26M%20AgriLife%20Extension%20Service%20experts.

[3] "The Case of Chinese Tallow Trees and Flea Beetles" by Jenifer Brown & Dr. Steve Payne, American Bee Journal, March 2018

[4] Ibid.

[5] "A Reasonable Discussion in Support of the Chines Tallow tree, Pollinator Forage, and Local Economies", Pollinator Stewardship Council, Pollinator News, September 28, 2018

[6] "The Double-Edged Sword of Biological Control and Restoration" by Svata M. Louda, School of Biological Sciences, University of Nebraska-Lincoln and Peter Stiling, Department of Biology, University of South Florida-Tampa, published online January 30, 2004

[7] Ibid.

[8] Ibid.

[9] Ibid.

[10] Ibid.

[11] Ibid.

[12] Ibid.